



Designing Tomorrow's Neighbourhoods

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Chris Mulder & Associates. The Boatshed, Thesen Islands.

Knysna, South Africa.

Seven Years on ...



Thesen Islands blooms

The many years of careful thought and painstaking planning that went into the Thesen Islands development project has yielded an abundance of beneficial spin-offs for the town of Knysna and its inhabitants. These benefits-substantially more than required in the initial government recommendations-have taken root in the community and are yielding a harvest of skills, revenue and opportunities that look set to be around for many years to come.

Dr Chris Mulder, head of CMAI, who was responsible for the overall planning and design of the project noted that the development has had a direct positive impact on the lives of many thousands of citizens. It contributed handsomely to the town's coffers and has helped in the upliftment of local small business. Here is a brief look at the project's history:

The Thesen Islands project has been one of the most complex construction developments ever undertaken in South Africa. It offers an illuminating example of how visionary planners and designers can incorporate the many conditions the State requires of new residential neighbourhoods – and meet the challenges of building in an environmentally sensitive area, preserving the history and heritage, while introducing innovative concepts in engineering, construction in marine conditions and restoration – to produce South Africa's largest marina and internationally praised as one of the best examples of its kind in the world.

The development comprises a 90 Ha



private estate spread across 19 manmade islands surrounded by 25 Ha of created tidal waterways and linked by 21 bridges and over 13 kms of laid roads. There are 522 freehold stands, a Thesen Harbour Town village centre, an apartment island consisting of 57 Loft style apartments in an old historic building and 11 Ha of landscaped park. The commercial and retail centre, Thesen Harbour Town, is located in the historical heart of the old timber factory area. Certain of the existing buildings and structures such as the old power station and steel gantries have been recycled and

incorporated into the new architecture. It was back in 1990 that CMAI first became involved in what was then the Thesen timber processing factory, when the 90Ha site, set in the Knysna Lagoon, was an environmental disaster. A four-year study of the situation by CMAI resulted in a set of proposals for the island's rehabilitation that would go on to make history. The derelict island was a nightmare of tons of timber waste, metres deep, that had accumulated over the previous seven decades of timber processing. Scores of factory buildings were developed and built

Thesen Islands Development

From eco disaster to marina gem

The delapidated island was a nightmare of toxic waste, polluted water and contaminated material

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over a decade and huge boilers spewing out black smoke over the lagoon generated acute air pollution problems. The actual timber treatment plant created a one hectare area of chemically polluted soils, and the pole yard area also contributed to soil pollution.

The CMAI proposals were accepted in 1999, but the design team (Urban designers, architects, landscape architects and engineers) had to comply with more than 100 stringent conditions governing the entire construction management process to ensure ecological, engineering, aesthetic, social and cultural criteria. Furthermore, the whole residential and commercial development was to take place within the extraordinarily sensitive environment of the Knysna lagoon estuary, which is rated one of South Africa's most precious, and home to a number of indigenous plants, birds and fishes, including the famous Knysna seahorse.

The first step was the clean-up. Engineers Arcus Gibb undertook the awesome task of removing the contaminated material and making the area safe for the future. Power construction was responsible for all the work on the island and also the clean up operation.

About 11 ha was affected with 1 ha directly below the pole drying yard containing some 300 cubic metres of heavily contaminated material. This was removed and transported in sealed trucks to a toxic waste dump in Cape Town. The remaining area was then surrounded by a 6 m deep trench of impermeable clay that acts as a firewall preventing leaching into the surrounding soil. A blanket of sodium bentonite was then used to cap the area with impenetrable material. This was then covered with 2 m of topsoil and finally sealed below the tarmac of the tennis courts and a parking lot.

'We had to cart away the waste in sealed trucks to a toxic dump site'

Construction started in 2000. Some of the innovative architectural and engineering feats achieved are highlighted below:

- The old timber factory needed to be demolished, but the rubble was not dumped. Instead, the 28 000 m³ of brick and concrete was crushed and recycled for



use in the road sub bases and hidden sections of the reno mattresses and canal gabion walls.

- Approximately 60 000 cubic metres of untreated timber waste off cuts and sawdust had been stockpiled on the island. A cheap and effective method was used to dispose of this material by milling it into fine pieces and injecting it with nitrogen and bacteria to create large mounds of compost. Most of this was sold off and the proceeds used to finance the process.

- Arcus Gibb undertook the work of the bulk earthworks based on the CMAI master plan and design. The existing level of the island had to be raised by almost 2 m from 1,2 m to 3 m to comply with the national regulation for buildings above sea level. The existing topsoil was removed and stored until the fill was in place then relaid over the sea sand to a depth of 200 mm. An enormous phased cut-to-fill exercise was undertaken to achieve a balance between the material cut from the canals and the fill required to raise the level of the islands, avoiding the need to remove or import fill.

- With its location in a tidal zone the project presented significant technical challenges. The existing island was divided into 19 smaller islands separated by a system of tidal waterways or canals. Eight dual dewatering systems were employed in sections of 48 m each sucking the canals dry and pumping the water into settlement dams. These dams were built to satisfy the conditions of approval which stipulated that there was to be no disturbance to the lagoon.

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Thesen Islands Development

Challenge of bridging the tides



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- A computer generated model of the canal system was built by the CSIR to study the flow velocity and circulation of water in order to avoid dead spots or scouring. The environmental health of the canals was also closely monitored during all phases of construction.

- Power Construction Coastal had to determine the best practical solution for the canal embankments. Gabions were chosen as they permitted a certain degree of flexibility allowing for different conditions and locations of the retaining walls. Around 80 000 cubic metres of rock was used in the construction of the gabion retaining walls.

- A major challenge during the construction of the canals was to keep the sea out of the working areas during construction. A series of plugs or earth beams were used in the gabion walls to prevent water from following the path of least resistance through the gabions. A 24-hour warning system was established to check the plugs. Breaking into the lagoon for the first time was a milestone and had to be planned carefully so that the water level inside the canals was close to that of the lagoon.



- Tidal circulation was re-established around the island through the construction of a 25 m bridge spanning the causeway between the mainland and the island. The causeway had previously housed an inadequate shallow culvert which had diverted the flow of water resulting in a build up of silt. The new bridge was piled and the beams cast in situ with the bridge edges receiving the same gabion treatment as the rest of the island. An additional 20 bridges were constructed to link the new smaller islands to one another.

- Roads with a combined length of 13 km were laid. These are all mono pitched allowing water to run into swales and ditches providing a form of natural irrigation for the landscaped parts of the islands.

See: Islands in the sun bring harvest for all.

Thesen Islands Development

Giving new life to historic buildings

These prime examples show how the derelict industrial structures of old Thesen Island were revived and adapted for new uses through imaginative architecture and innovative engineering.



The Dry Mill

The Dry Mill is one of the old industrial structures of the former Thesen Sawmill, which has been retained for adaptive re-use into fifty six luxury loft apartments. The existing steel structure of this large timber drying shed has been retained and the new buildings have been inserted into the existing framework. The new building components are arranged along the north and south edges of this 20 x 200m long rectangular structure creating a central open passage for vehicular access to all the units.

This also ensures that the south facing units get sufficient natural light. The units are arranged over three floors to ensure the maximum amount of water frontage and natural light with single-title three storey units and sectional-title duplexes & penthouses. The units are grouped into blocks with open courtyards between them which help to articulate the building's elevations horizontally, while elevator shafts provide verticality and serve as focal points along the building's edges.

Each unit has its own boat mooring to encourage the use of water-borne transportation instead of cars and both the building's location and design assists in creating a total lifestyle solution. The building was subject to rigid design guidelines as set out by the developers and in addition to this it also employs shapes and materials that reflect the island's rich maritime and industrial heritage.



Harbour Town

Set in and around the heart of the old Thesen Sawmill, old industrial buildings such as the power station, sawtooth building and the boatshed integrate into a compact new mixed-use neighbourhood centre where the building forms remain, while internal uses adapt to new activity patterns - patterns based on pedestrian friendly streets and squares that behave like outdoor rooms. Harbour Town is all about place-making, essentially a re-ordering of the built environment on a form-based code (vs conventional euclidean land-use zoning) focusing on streetscapes and the shape and placement of the buildings that line it.

The Boatshed

The Boatshed is situated in Harbour Town on the site of the former Thesen Sawmill. The building has been adapted to house a variety of functions like a restaurant, shops, offices, apartments, a spa and a lodge. The entire existing timber framework has been retained and all the existing timber cladding has been re-used.

The Sawtooth & The Old Clinic

The Sawtooth is one of the old factory buildings. All the existing walls, yellowwood trusses and roof structures have been retained and the building has been transformed into an upmarket shopping centre. The building is an example of how derelict industrial structures can be sensibly adapted and re-used to house a variety of functions in a way that still retains the memory and ambience of its original state.

The Parking Shed

The Parking Shed is also an example of how derelict industrial structures can be sensibly adapted and re-used for various applications and how a normally utilitarian function like a parking garage can be accommodated in a structure that contributes to the ambience of a tourism hub. It also shows how passive design and adaptive re-use of materials and existing structures can minimize the physical impact of a new development on an environmentally sensitive area where resources like electricity and water are already in short supply.



Thesen Islands Development

Islands in the sun yield harvest of benefits for all

The seeds of numerous small building service and supply enterprises were planted during construction of Thesen Islands. Some of the small one-man sub-contractors that worked on the site, today drive their own monogrammed bakkies and operate thriving firms.

From the start, the Thesen Islands leadership team used only local suppliers and contractors ensuring significant economic development through job creation and skills transfer. The project injected some R120 million a year into the local economy during the six-year construction period.

Thesen Islands has become the town's largest employer and payer of rates, taxes and VAT. From the start, the Thesen Islands leadership team used only local suppliers and contractors and the latest research shows that some 1 500 jobs have been created on Thesen Islands, far ahead of projections.

Dr Mulder notes that 75% of the temporary jobs and 93% of the permanent jobs are filled by people from Knysna which also means that the income generated circulates mainly within the local economy.

Almost 40 building contractors built on Thesen Islands and numerous sub-



contractors and suppliers of services and products like curtains, furniture, landscaping, gardening, white goods and electronics, TV's and services have blossomed. Some 1 000 vehicles enter the islands every morning to work on the island. As to the environment, the canal system has added almost 25 ha of viable aquatic habitat to the Knysna Lagoon ecosystem and the threat of atmospheric and water pollution caused by previous industry on the island has been removed. The canals are

teeming with marine life and thousands of seahorses are living in the canals. About 3 000 trees have been planted and a bird reserve has been created. A series of freshwater wetlands accommodates all the storm water runoff before entering the lagoon. An Environmental Technology Centre will open next year funded by Barloworld, the previous owners. Students, learners and the public will be able to access and visit this centre and have free access to all the facilities.

Projects in progress

1. Uitzicht- A mixed use pedestrian friendly residential community 257 Ha

Location: Knysna
EIA application in process

2. George Rex Place A 20 Ha mixed use medium density residential /commercial walkable community development

Location: Knysna
EIA and Rezoning application completed.

3. Geelhoutboom Estate: A 1000 Ha Farming and residential lifestyle development with a large commercial farming component.

Location: George
EIA and Rezoning currently underway.

4 Jack Nicklaus Golf Club and Residential Estate
Location: Plettenberg Bay
Approval process in progress



George Rex Place street scene.

5 Gansevallei: a 750 ha mixed residential and game farm life style development allowing for the entire mix of residential scope and opportunities

Location: Plettenberg Bay
Approval process in progress

6 Hanglip: a unique 1080HA mixed use residential and golf course estate with over 70% nature areas.

Location: Plettenberg Bay
EIA completed.

7 Kurland : A 2300 HA rural village and agri- estate involving commercial and industrial existing opportunities and including an existing village.

Location: Plettenberg Bay
EIA in progress.

8 Gouritzmond: A 1300 Ha agri and residential village with a large agricultural and aquaculture component in a hamlet style residential village.

Location: Gouritz
Approval process in progress

9 St Francis Hotel

Location: St Francis Bay. A resort hotel on the beach
In progress

10 Maselspoort: redevelopment of the well know resort into a waterfront new urbanist residential village

Location: Bloemfontein
EIA in progress

Projects in progress

Kurland will transform The Craggs

Locals will be helped to establish their own nut farms

The proposed development of the 2 600ha Kurland Estate will transform the surrounding area of The Craggs, upgrade the local communities, introduce small-scale nut farming and processing and put the micro-economy into top gear.

Announcing the proposals, Kurland Estate director Clifford Elphick, said the development would be a powerful force for good in building the long-term viability of The Craggs area. Chief among the proposals is the redevelopment of Kurland Village and the establishment of macadamia nut farms for small and emerging farmers.

A large part of the development will be to enhance the polo facilities which have already made Kurland an international polo venue. The directors are at pains to point out that such development will only work if the entire area is uplifted at the same time and that the local community is integrated into the overall development objectives.

Among the many other proposals are:

- A private school for all
- A small commercial village
- Two mixed-use villages
- Multi-density housing
- Light industry
- A public clinic
- Community skills centre
- Dams, nature trails and tourism facilities



The development, which will provide homes and career opportunities for all income groups in a rural setting, will enclose, and in time transform, the currently neglected and almost forgotten Kurland Village of some 3 000 people.

The design proposal for the development is supported by professional research into the vegetation, wetlands, wildlife, soil types and water availability. In addition, technical studies cover roads, storm-water management, electricity, as well as the potential traffic and visual impact of the development.

Large areas of the Estate will be cleared of invasive alien vegetation and the fynbos and wetlands areas rehabilitated. Low-profile tourist facilities in the form of hiking and horse trails as well as bush camps will be created. The Kurland Hotel will retain its Relais & Chateau status. Soil tests have determined the best agricultural land and viable farming activities will be matched against available water resources.

Although the polo activities, including stabling, on Kurland will continue,

substantial farming operations are envisaged, such as macadamias and other crops including essential floral oils. These operations will be labour intensive.

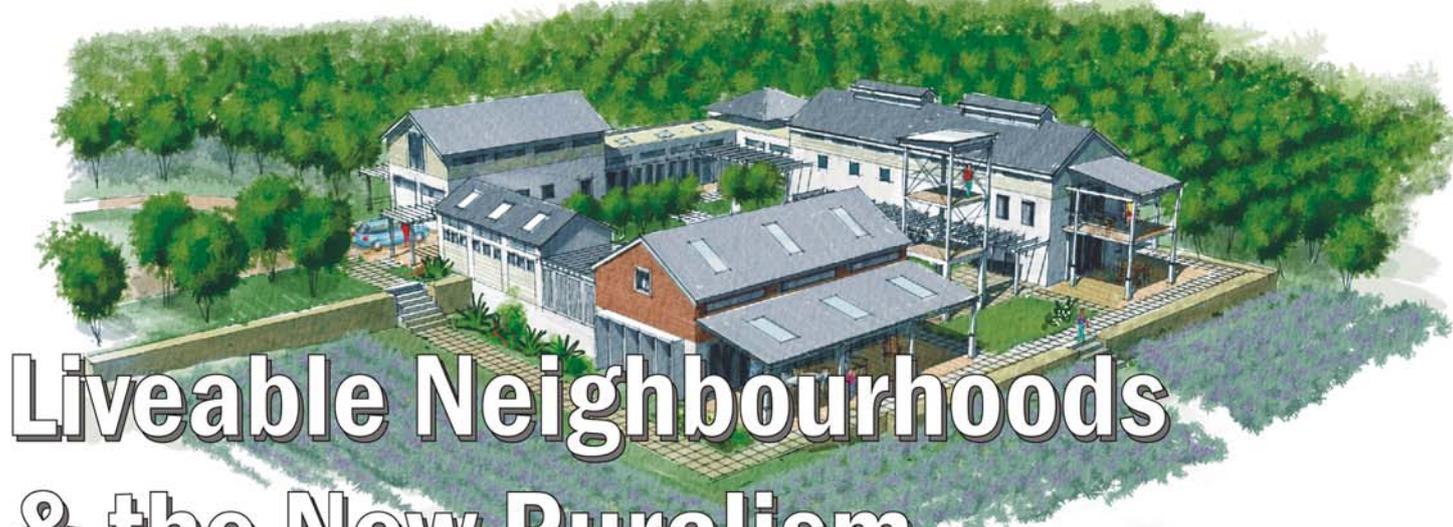
A macadamia nut project will be extended to small emergent farmers in the area using a co-operative model. Plans provide for a nut processing plant that will need about 200 Ha of trees to be economically viable. Small farmers will be helped to establish nut orchards, and will be provided with planting material and tree-care training. Harvests will be marketed under the 'Kurland' brand.

Clifford Elphick says he believes the proposed development of the Estate could be a powerful force for the good of the area. "In my view it fully conforms with the Provincial authorities' triple bottom line requirement in terms of environmental and socio-economic sustainability, and is in line with the objectives set out in the government's recently announced Accelerated and Shared Growth Initiative of South Africa (ASGISA)."

Architecture at its stylish best

CMAI takes a holistic approach to projects, enabling us to creatively respond to the unique needs of clients in the fields of: residential architecture, urban design, commercial architecture and landscape architecture. Innovation and a sensitive approach to design results in a unique architecture that is carefully integrated into its surroundings. A committed team with a wide field of expertise and a firm knowledge base creates projects that are refreshingly South African, with a fresh approach that puts integrity of form and function above convention.





Liveable Neighbourhoods & the New Ruralism

The "new ruralism" is a way of thinking and living in tune with nature and natural forces "to rise with the sun, fish with the tides and rest with the moon." And "liveable neighbourhoods" are custom-designed communities that are the antithesis of conventional suburban sprawl of ad hoc, uncontrolled and non integrated development totally dependant on the motor car for survival.

Liveable neighbourhoods are designed to make daily life pleasant and efficient, as opposed to the chore it has become with hours spent driving through traffic-clogged streets to schools, places of work, retail centres, malls and sports and leisure facilities.

Liveable neighbourhoods - in both a rural and urban-setting - are self-contained estates, hamlets or villages built to reduce dependency on cars, provide easy access to public and commercial amenities, increase community interactivity, increase cost-effectiveness of services and provide a simplified but higher quality of lifestyle.

The New Ruralism concept addresses the rural lifestyle that has long been part of the South African dream: a place in the town, the rural edge of the town or in the country where families can create a new way of life away from the hustle and bustle of cities. Increasing numbers of people are moving into smaller towns in country areas and solid environmental and social thinking is needed by developers to ensure that these rural areas are sustainable for the future.

Regions that offer locations for quality rural lifestyles in and around rural villages or even new villages are limited, and in areas such as the Garden Route suitable land supply is dwindling rapidly. Thus, next to location, the most important factor in real estate has become imagination!

Most of the choice land that is available is often situated in or next to ecologically sensitive areas: state parks and nature reserves, wetlands, agriculturally zoned areas and forest areas. As a result, in-depth environmental assessments are required before the state will give the go-ahead for any particular development to take place, and then only within strict and numerous

guidelines and provisions.

Planning codes for livable communities are equally as vital for up market luxury developments as for middle-level and low income communities. In South Africa, such neighbourhoods have to also be responsive to the country's changing social, economic and cultural needs.



Quality of life is determined not by gold-plated taps and private croquet lawns, but by public amenities such as safe park areas, interconnected networks of walk able streets with footpaths, cycle ways and pavement greenery that can be enjoyed by the whole community. Shops, offices, schools and public buildings all need to have easy access, and such mixed-use developments can provide a diversity of housing types and densification that allows for affordable housing and more cost-effective services.

Such integrated strategy incorporating land

use, transportation and built form planning maximizes urban synergies with decreased use of cars, minimized environmental impact, increased economic viability and small business opportunities - all lead to a more sustainable community.

In addition, such planning reduces energy use, greenhouse gases and urban sprawl. In fact if one tries to identify what urban sprawl really is in normal language, it is basically ad hoc and non integrated developments happening and approved over time without any forward planning and or any form of control by both the relevant developer and the approving authorities. This is an inherent flaw and problem with our current zoning laws and approval systems and land use planning systems. Once such a zoning approval (two dimensional and use orientated) is given, and implementation follows, there is no evaluating system in place to evaluate the result of such a decision. No municipal, or provincial authority ever has the time, the money, the manpower or the inclination to go back and critically evaluate the impact of a zoning decision on the land and the community. On top of it, in large areas of the Western Cape we are still sitting with land use control documents dating back to 1983/4 and totally riddled with apartheid legislation.

The livable neighbourhood approach, now recognized and encouraged globally, calls for planners to integrate local heritage and cultural character into the architecture, landscaping and ambience of the area. Such neighbourhoods incorporate a sense of place and community, encourage a sense of conservation with home owners' associations and promote a sense of community pride and responsibility. Above all, urban sprawl is avoided, while a connection to nature is retained through preservation and thoughtful development, and not its exploitation. Growing populations, and the essential growth rate of the country need to be accommodated through sustainable and sensitive rural development as well as innovatively designed and liveable urban densification.

PEOPLE BEHIND THE PROJECTS



● **Dr Chris Mulder BSc (UP), MLA (UP), D.ED (Doctor of Environmental Design) Texas A & M University, USA.**

Chris has been Chairman and CEO of the firm Chris Mulder Associates Inc. (CMAI) for the past 26 years. Prior to this Chris held various positions as Lecturer in Landscape Architecture at the University of Pretoria, and Environmental Design Senior Lecturer at Texas A & M University. A unique speciality and expertise has been developed in obtaining development approvals for environmentally sensitive properties in coastal areas.



● **Steff Mulder BArch (UP)** is mainly involved with Residential Architecture, Urban Design and Land Planning. Steff focuses on the creation of integrated, sustainable urban and rural communities. He has attended various workshops on the New Urbanist approach to Town and Urban Planning focusing on the process of creating integrated, sustainable communities



● **Mike Louw BArch (UP) PrArch (SA)** is a design-oriented Architect who believes in sustainable design. He twice was a recipient of the Sheila Curtley McIntosh prize for the best student in all subjects at the University of Pretoria's Architecture School and attended the Glenn Murcutt Masters Class in 2005.



● **Cordia Louw BArch (UP) PrArch (SA)** is involved with Residential architecture, Commercial architecture, various adaptive re-use projects, Urban design and Urban regulations. She has a holistic approach to architecture and believes in architecture with a human scale. She attended the Architecture & Urban design "Smartcode" workshop in the USA in 2005.



● **Eugene Marais (BArch)** has worked on a wide variety of projects and specialized in Commercial Interior Architecture before working in Ireland for several years where he was responsible for many major projects and was Project Architect and involved in the master planning on a major golf resort and residential development.

Thoughts behind the people

"It is important for us as planners, designers, decision-makers and developers to blend our creative, technical and management skills with a professional ethic that shapes a sustainable future for both people and the environment: I guess it all boils down to how we, in South Africa, can create opportunities for social upliftment and nurture economic growth without undermining the natural resource base and environmental integrity." - Dr Chris Mulder (1984)

With 25 years of experience, and a highly specialised team of consultants, CMAI successfully applies its unique development, project planning and design co-ordination process. Through multi-faceted large-scale projects in sensitive coastal areas, we support economic growth, the protection of our environmental and heritage resources, and the creation of "a home for all". The environment is not a "back drop" to a development, but an integral part of the development itself. CMAI's unique ability to feel the land, creates and unlocks considerable development value for any land-owner; seeing, feeling, imagining and appreciating land's development potential, thereby giving meaning to our slogan:

● CMAI is committed to the environmentally sensitive development of land, property and natural resources.

● Our aim is to optimise the commercial, socio-economic and environmental value of all projects.

● We apply a holistic approach supported by the diverse skills of a multi-disciplinary team and multi-agency co-ordination.

● As professionals and as individuals we strive to excel in environmental planning and design which are consistently delivered with superior service.

● We value the unique creative contribution of the individual and rewarding personal relationships with our clients

● As specialists in coastal development our core services include:

● Identifying and assessing the development potential of large land holdings

● Co-ordinating and securing development and environmental approvals

● Master Planning and Site development planning

● Urban Design

● Project Co-Ordination and Management



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